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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,816	09/22/2008	Kirsten Povel	06088	6264

23338 7590 03/23/2012

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EXAMINER	
KUNDU, SUJOY K	
ART UNIT	**PAPER NUMBER**
2857	

MAIL DATE	DELIVERY MODE
03/23/2012	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,816	POVEL ET AL.	
	Examiner	Art Unit	
	SUJOY KUNDU	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 March 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-9* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-9* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being anticipated by Shimada et al. (Melanin and blood concentrations in a human skin model studied by multiple regression analysis: assessment by Monte Carlo simulation") and Cane et al. (US Patent No. 7,054,674) in view of Hack et al. (US 2005/0255424 A1).

With regards to Claim 1, Shimada teaches a method for determining the color effect, wherein the remission of the multilayer system is calculated by means of forward Monte Carlo simulation of intrinsic optical parameters dispersion coefficient μ_s, anisotropy factor g and absorption coefficient of the different materials, calculated by inverse Monte Carlo simulation, taking into consideration refractive index n, thickness d of the respective layer of the materials as well as dispersion phase function of the individual materials and the color effect determined from the remission, characterized in that the intrinsic parameters dispersion coefficient μ_s, anisotropy factor g and absorption coefficient of each of the materials are first calculated on the basis of a layer thickness of material enabling transmission of light and that a corrected absorption

coefficient μ_{ak} is then calculated by inverse Monte Carlo simulation on the basis of the remission of the respective material of an optically dense layer having a thickness d_D, the corrected absorption coefficient μ_{ak} as the absorption coefficient forming the basis for calculating the remission and the color effect of the multilayer system (Page 2397, Abstract, Page 2398-2399, Section 2.2 Monte Carlo simulation and inverse Monte Carlo simulation, (Figure 1, 3, 4).

Shimada is silent with regards to determining the color effect of a series of layers in teeth or dental materials and wherein the intrinsic optical parameters are determined on the basis of spectrometric measurements.

Cane teaches wherein the intrinsic optical parameters are determined on the basis of spectrometric measurements (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the intrinsic optical parameters are determined on the basis of spectrometric measurements as taught by Cane into Shimada for the purpose of accurately measuring the color effect.

Shimada and Cane are silent with regards to a series of layers in teeth or dental materials.

Hack teaches a series in teeth or dental materials (Paragraph 4 and 39 - Hack makes spectrometric measurements which can evaluate tooth tissues).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a series in teeth or dental materials as taught by Hack

into Shimada and Cane for the purpose of detecting and evaluating a response radiation sent back from the irradiated tooth tissue region.

With regards to Claim 2, Shimada teaches the method which characterized in that the intrinsic optical parameters are determined on the basis of spectrometric measurements (Page 2397, Abstract).

With regards to Claim 3, Shimada teaches the method which characterized in that the intrinsic optical parameters are taken from a data bank (Page 2397, Abstract).

Note: Because there are a multitude of complex calculations, it would be inherent that these parameters would be stored in a memory.

With regards to Claim 4, Shimada teaches the method characterized in that the intrinsic optical parameters dispersion coefficient μ_s, uncorrected absorption coefficient . μ_a and anisotropy factor g of a material are calculated on the basis of macroscopic optical parameters of the material in the form of diffuse remission R_d as well as diffuse transmission T_d and/or total transmission T_t and/or collimated transmission T_c, taking into consideration the dispersion phase function of the material, thickness d of a layer of the material used during determination of the macroscopic parameters and refractive index n of the material by means of inverse Monte Carlo simulation (Page 2397, Abstract, Page 2398-2399, Section 2.2 Monte Carlo simulation and inverse Monte Carlo simulation, (Figure 1, 3, 4).

With regards to Claim 5, Shimada teaches the method characterized in that the remission of the layer system is calculated for the series of layers consisting of different materials on the basis of the corrected absorption coefficient μ_{ak}, the dispersion

coefficient μ_s and the anisotropy factor g of each material, taking into consideration at least the dispersion phase function, the refractive index n and thickness d of each layer and series of layers by means of forward Monte Carlo simulation (Page 2397, Abstract, Page 2398-2399, Section 2.2 Monte Carlo simulation and inverse Monte Carlo simulation, (Figure 1, 3, 4).

With regards to Claim 6, Shimada teaches the method characterized in that, when calculating the intrinsic optical parameters by means of the inverse Monte Carlo simulation, measurement parameters and/or measurement geometries from the experimental determination of the macroscopic optical parameters are taken into consideration (Page 2397, Abstract, Page 2398-2399, Section 2.2 Monte Carlo simulation and inverse Monte Carlo simulation, (Figure 1, 3, 4).

With regards to Claim 7, Shimada teaches the method characterized in that the calculation of the color effect from the remission takes place by means of algorithms or multifactor analysis (Page 2397, Abstract, “regression”).

With regards to Claim 8, Shimada teaches the method characterized in that the color effect is calculated taking the geometric extension such as curvature of the layer system into consideration (Figures 1 and 2).

With regards to Claim 9, Shimada teaches the method characterized in that, when using an Ulbricht sphere-type spectrometer as measurement geometry, test geometry, diaphragm diameter, sphere parameter, beam divergence or diameter of a light spot are used as a basis (Page 2397, Abstract).

Note: This feature seems to be inherent.

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUJOY KUNDU whose telephone number is (571)272-8586. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Schechter can be reached on 571-272-2302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sujoy K Kundu/
Primary Examiner, Art Unit 2857
March 21, 2012